FALCON RME
PROPANE ASPHALT HOT PATCHERS

OPERATION, PARTS AND REPAIR MANUAL

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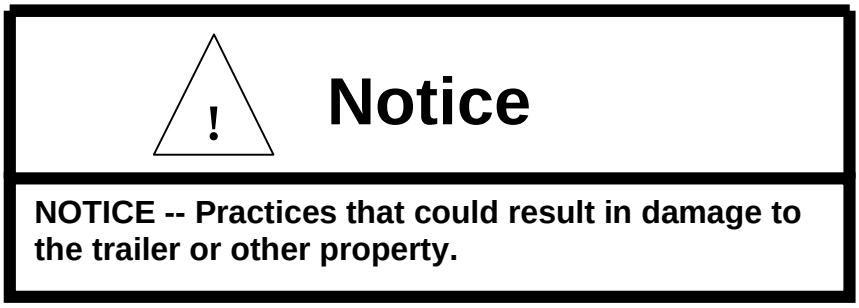
SAFETY ALERT SYMBOLS AND SIGNAL WORDS

This manual references the words DANGER, WARNING, CAUTION and NOTICE. The level of risk is indicated by the following signal words. Do not attempt to use the asphalt hot patcher until **reading and understanding** the safety and operational considerations of the equipment.



OPERATOR WARNINGS

WARNING INSTRUCTIONS ARE SUMMARIZED BELOW AND APPEAR THROUGHOUT THE MANUAL WHERE APPLICABLE. DO NOT USE THE ASPHALT HOT PATCHER UNTIL YOU HAVE READ AND UNDERSTOOD ALL THE SAFETY INFORMATION CONTAINED IN THIS DOCUMENT.

SHOULD ANY SAFETY OR WARNING DECALS BECOME UNREADABLE, NOTIFY FALCON at (989) 495-9332 AND REPLACEMENTS WILL BE PROVIDED AT NO CHARGE.

General

DANGER: NEVER USE FLAMMABLE MATERIAL IN OR NEAR THE HOPPER. DOING SO MAY CAUSE SERIOUS INJURY.

DANGER: THE PROPANE BURNER(S) SHOULD ONLY BE SERVICED BY AN AUTHORIZED SERVICE PERSON. SERIOUS INJURY OR DEATH COULD RESULT FROM IMPROPER SERVICING OF THE BURNER(S).

DANGER: TO AVOID INJURY OR DEATH WHEN USING THE ASPHALT HOT PATCHER, STAND BACK WHEN ASPHALT IS FLOWING OUT THE MATERIAL DOOR OF A TILTED HOPPER (i.e. DUMP BOX TRAILER or SLIP-IN PATCHER MOUNTED ON DUMP TRUCK BED).

DANGER: RAISE JACK BEFORE MOVING TRAILER. FAILURE TO RAISE THE JACK CAN CAUSE THE TRAILER TO FLIP AND CAUSE SERIOUS INJURIES.

DANGER: NEVER ATTEMPT TO SERVICE THE HOT PATCHER WHEN OIL OR COMPONENTS ARE HOT OR SERIOUS INJURY COULD OCCUR.

DANGER: ALWAYS USE SAFETY CHAINS AND CONFIRM PROPER COUPLING OF TRAILER TO TOWING VEHICLE BEFORE MOVING AN ASPHALT TRAILER.

DANGER: FAILURE TO USE LOCKING PINS LOCATED ON SIDEWALLS OF HOPPER TO HOLD MANUALLY OPERATED LOADING DOORS OPEN COULD CAUSE DOORS TO CLOSE ON THE OPERATOR CAUSING SERIOUS INJURY.

DANGER: ENSURE THAT ALL EQUIPMENT IS SECURED TO THE PATCHER BEFORE MOVING OR SERIOUS INJURY AND OR DEATH COULD RESULT.

DANGER: DO NOT ALLOW THE PROPANE BURNER(S) TO RUN IN AN AREA THAT IS NOT WELL-VETILATED.

DANGER: TO PREVENT ACCIDENTAL MOVEMENT OF TRAILER WHEN UNHOOKED FROM TOW VEHICLE, ALWAYS USE WHEEL CHOCKS AND STORE ON A FLAT SURFACE.

DANGER: NEVER CONNECT BREAKAWAY CABLE TO SAFETY CHAINS.

OPERATOR WARNINGS (CONTINUED)

General Continued

DANGER: SECURE ALL EQUIPMENT TO THE HOT PATCHER BEFORE MOVING OR SERIOUS INJURY COULD BE CAUSED BY EQUIPMENT FALLING OFF THE PATCHER.

WARNING: WHEN PLUGGING IN 24-HOUR TIMER OR BATTERY CHARGER TO BUILDING POWER, ENSURE THAT A 120VAC GROUND FAULT CIRCUIT INTERRUPT OUTLET IS USED. USE A HEAVY-DUTY UL APPROVED EXTENSION CORD AND PLUG EXTENSION CORD INTO ASPHALT HOT PATCHER BEFORE CONNECTING TO GROUND FAULT BUILDING POWER OUTLET.

WARNING: ONLY CHANGE TRANSFER OIL IN TACK TANK, OIL-JACKETED HOPPER AND 50/550 THERMOMETERS WHEN OIL IS COLD.

CAUTION: STANDING TOO CLOSE TO THE PATCHER WHILE CLOSING THE LOADING DOORS COULD CAUSE OPERATOR INJURY.

CAUTION: THE SHOVELING PLATFORM OF THE PATCHER IS HOT. BE CAREFUL WHEN WORKING NEAR THE SHOVELING PLATFORM AND NEVER TOUCH THE PLATFORM WITHOUT PROTECTIVE GEAR.

CAUTION: FALCON RME RECOMMENDS WEARING PROTECTIVE CLOTHING WHILE OPERATING OR CLEANING THE ASPHALT HOT PATCHER AND TACK TANK.

CAUTION: NEVER EXCEED THE LOAD LIMIT OF THE HOPPER.

NOTICE: NEVER HANG ON MATERIAL METERING DOOR CROSSBAR.

Dump Trailers

DANGER: NEVER LIFT THE DUMP BOX TRAILER OR SLIP-IN ASPHALT HOT PATCHER WITHOUT FIRST OPENING THE MATERIAL DOOR TO THE DESIRED POSITION.

DANGER: NEVER LEAVE THE HOPPER OF A DUMP BOX TRAILER RAISED WHEN MOVING THE PATCHER.

OPERATOR WARNINGS (CONTINUED)

Dump Trailers Continued

WARNING: LEAVING OUTRIGGERS DOWN WHEN THE TRAILER IS MOVING CAN CAUSE THE TRAILER TO FLIP AND CAUSE SERIOUS INJURIES OR DEATH.

CAUTION: STAND BACK 10 FEET FROM PATCHER ANYTIME THE DUMP BOX HOPPER IS IN MOTION.

CAUTION: ALWAYS USE THE CYLINDER GUARD (STORED ON THE HINGED SIDE OF THE HYDRAULIC PUMP STORAGE TOOLBOX) WHEN THE DUMP BOX HOPPER IS IN THE RAISED POSITION AND REMOVE/REPLACE BEFORE LOWERING.

CAUTION: BEFORE THE DUMP BOX HOPPER IS RAISED, LOWER BOTH OUTRIGGERS AND INSERT PIN INTO POSITION SUCH THAT THE BASE OF THE OUTRIGGER IS AS CLOSE TO THE GROUND AS POSSIBLE. SHOULD THE PATCHER ACCIDENTALLY UNCOUPLE FROM THE TOW VEHICLE, THE OUTRIGGERS WILL PREVENT THE PATCHER FROM TIPPING BACKWARDS.

CAUTION: NEVER RAISE DUMP BOX WITH TOP DOORS OPEN.

NOTICE: PROTECT THE REMOTE HOPPER CONTROL FROM BEING DAMAGED AT ALL TIMES. IF CONTROLLER IS EVER DAMAGED, REPAIR OR REPLACE BY AN AUTHORIZED SERVICE TECHNICIAN. DO NOT ALLOW CONTROLLER CORD TO GET PINCHED WHEN DUMP BOX LOWERS.

Slip-In Units

DANGER: STAND BACK WHILE CONFIRMING THAT SLIP-IN PATCHER IS SECURED IN DUMP BOX. IF NOT SECURED PROPERLY, PATCHER COULD FALL OUT AND CAUSE SERIOUS INJURY OR DEATH.

WARNING: TO AVOID SERIOUS INJURY, ENSURE THAT ONLY TRAINED PERSONNEL LOAD AND SECURE A SLIP-IN UNIT TO THE TOWING VEHICLE PER OWNER PROCEDURES.

WARNING: REMOVE ALL ASPHALT FROM PATCHER BEFORE LOADING OR UNLOADING A SLIP-IN UNIT.

WARNING: ENSURE LOADING/UNLOADING EQUIPMENT (I.E. FORKTRCK) HAS CAPACITY TO HANDLE THE WEIGHT OF THE PATCHER BEFORE MOVING.

OPERATOR WARNINGS (CONTINUED)

Hydraulic Operated Units

WARNING: PRIOR TO OPENING HYDRAULIC LOADING DOORS, MAKE SURE THERE IS CLEARANCE ABOVE AND AROUND THE ENTIRE PERIMETER OF THE PATCHER WHILE LOADING DOORS ARE OPEN/OPENING.

WARNING: TO PREVENT SERIOUS INJURY AND TO PREVENT DAMAGE TO THE ASPHALT HOT PATCHER AND TOW VEHICLE, IT IS ESSENTIAL THAT A QUALIFIED HYDRAULICS TECHNICIAN PERFORM HYDRAULIC CONNECTIONS AND ADJUSTMENTS.

CAUTION: TO AVOID SERIOUS INJURY, DO NOT PUT HANDS NEAR HYDRAULIC MATERIAL DOOR WHEN LIFTING OR LOWERING.

Propane Units

DANGER: THE PROPANE BURNER SHOULD ONLY BE SERVICED BY AN AUTHORIZED SERVICE PERSON. SERIOUS INJURY OR DEATH COULD RESULT FROM IMPROPER SERVICING OF THE PROPANE BURNER.

DANGER: DO NOT ALLOW THE PATCHER BURNER(S) TO RUN IN AN ENCLOSED AREA THAT IS NOT PROPERLY VENTILATED.

CAUTION: IF YOU SMELL RAW GAS DO NOT ATTEMPT TO IGNITE BURNER.

CAUTION: NEVER PLACE FACE CLOSE TO BURNER

CAUTION: DO NOT USE BURNER WITHOUT SPARK IGNITER AND FLAME ROD IN PLACE

Loss of control of the trailer or trailer/tow vehicle combination can result in death or serious injury. The most common causes for loss of control of the trailer are:

- Driving too fast for the weather conditions
- Driving too fast (maximum speed when towing a trailer is 60 mph)
- Overloading the hopper
- Trailer improperly coupled to the hitch
- Inadequate tow vehicle or towing hitch
- No braking on trailer
- Not maintaining proper tire pressure
- Not keeping lug nuts tight and
- Not properly maintaining the trailer structure.

An owner's manual that provides general trailer information cannot cover all of the specific details necessary for the proper combination of every trailer, tow vehicle and hitch, therefore, you must read, understand and follow the instructions given by the tow vehicle and trailer hitch manufacturers, as well as the instructions in this manual.

Reporting Safety Defects

If you believe that your vehicle has a defect that could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Falcon RME at 120 Waldo Ave., Midland, MI 48642 Phone (989) 495-9332.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Falcon RME.

To contact NHTSA, you may call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153), go to http://www.safercar.gov; or write to: Administrator, NHTSA, 400 7th Street SW, Washington, DC 20590. You can also obtain other information about motor vehicle safety from http://www.safercar.gov.

MAJOR HAZARDS

Driving Too Fast

With ideal road conditions, the maximum speed when safely towing a trailer is 60 mph. If you drive too fast, the trailer tires will overheat and possibly blow out. As your speed increases, you are more likely to suddenly lose control. Never exceed 60 mph while towing the trailer.

Failure to Adjust Handling While Towing a Trailer

When towing a trailer, you will have decreased acceleration, increased stopping distance, and increased turning radius (which means you must make wider turns to keep from hitting curbs, vehicles, and anything else that is on the inside corner). In addition, you will need a longer distance to pass, due to slower acceleration and increased length.

- **Be alert for slippery conditions. You are more likely to be affected by slippery road surfaces when driving a tow vehicle with a trailer.**
- **Anticipate the trailer "swaying". Swaying is the trailer's reaction to the air pressure wave caused by passing trucks and busses. Continued pulling of the trailer provides a stabilizing force to correct swaying. Do not apply the brakes to correct trailer swaying.**
- **Check rearview mirrors frequently to observe the trailer and traffic.**
- **Use Low gear when driving down steep or long grades. Use the engine and transmission as a brake. Do not ride the brakes, as they can overheat and become ineffective.**
- **Be aware of your trailer height.**

Trailer Not Properly Coupled to the Hitch

It is critical that the trailer be securely coupled to the hitch, and that the safety chains are correctly attached. Uncoupling may result in death or serious injury.

Warning

Proper selection and condition of the coupler and hitch are essential to safely towing your trailer. A loss of coupling may result in death or serious injury.

Be sure the hitch load rating is equal to or greater than the load rating of the coupler.

Be sure the hitch size matches the coupler size.

Observe the hitch for wear, corrosion and cracks before coupling. Replace worn, corroded or cracked hitch components before coupling the trailer to the tow vehicle.

Be sure the hitch components are tight before coupling the trailer to the tow vehicle.

Warning

An improperly coupled trailer can result in death or serious injury.

Do not move the trailer until:
1) The coupler is secured and locked to hitch
2) The safety chains are secured to the tow vehicle; and
3) The trailer jack is fully retracted.

Do not tow the trailer on the road until:
1) Tires and wheels are checked
2) The trailer brakes are checked
3) The breakaway switch is connected to the tow vehicle
4) Everything is secured to the trailer (i.e. tools, compactor, toolbox closed, electrical enclosure closed, fuel cap on).
5) The trailer lights are connected and checked.

Warning

Improper rigging of the safety chains can result in loss of control of the trailer and tow vehicle, leading to death or serious injury, if the trailer uncouples from the tow vehicle.

1) Fasten chains to frame of tow vehicle. Do not fasten chains to any part of the trailer hitch.

2) Cross chains underneath hitch and couple with enough slack to permit turning and to hold tongue up should the trailer come loose.

Incorrect Use of Breakaway Brake

Falcon trailers are equipped with a breakaway brake system that can apply the brakes on your trailer, should your trailer come loose from the hitch for any reason. The safety chains and breakaway brake system must be in good condition and properly rigged to be effective.

Warning

An ineffective or inoperative breakaway brake system can result in a runaway trailer, leading to death or serious injury if the coupler or hitch fails.

The lanyard should be long enough to allow for turning corners, yet short enough to disengage the pin from the switch before the safety chains on the hitch become taut in a trailer disconnect situation.

The breakaway cable must be connected to the tow vehicle -- NOT to any part of the hitch.

Before towing the trailer, test the breakaway brake system. If the breakaway brake system is not working, do not tow the trailer but have it serviced or repaired before moving.

Mismatch of Trailer and Hitch

Danger

Use of a hitch with a load rating less than the load rating of the trailer can result in loss of control and may lead to death or serious injury.

Use of a tow vehicle with a towing capacity less than the load rating of the trailer can result in loss of control, and may lead to death or serious injury.

Be sure your hitch and tow vehicle are rated for the Gross Vehicle Weight Rating identified on the VIN tag of your trailer.

Unsafe Tires, Lug Nuts or Wheels

It is essential to inspect the trailer tires before each use. If the tire has a bald spot, bulge, cuts, is showing any cords, or is cracked, replace the tire before towing. Tires with inadequate tread will not provide adequate tracking on wet roadways and can result in loss of control, leading to death or serious injury.

Improper tire pressure causes an unstable trailer and can result in a tire blowout and loss of control. Before each tow, you must check the tire pressure. Tire pressure must be checked when tires are cold. Allow three hours cool-down after driving as much as 1 mile at 40 MPH before checking tire pressure. NOTE: Tire pressure identified on VIN tag is the tire pressure at the time the equipment was delivered. Check the pressure rating on the tire to determine the pressure requirements of the tire in case they have been changed.

Warning

Improper tire pressure can result in a blowout and loss of control which can lead to death or serious injury.

Be sure tires are inflated to pressure indicated on side wall of tire before towing trailer.

Lugnuts on trailer wheels are prone to loosen. Before each tow, check to make sure they are tight.

Warning

Metal creep between the wheel rim and lug nuts will cause rim to loosen and could result in a wheel coming off, leading to death or serious injury.

Tighten lug nuts before each tow to 100 foot pounds. (See page 19)

Lug nuts are also prone to loosen after first being assembled. When driving a new trailer (or after wheels have been remounted), check to make sure they are tight after the first 10, 25 and 50 miles of driving and before each tow thereafter.

Failure to perform this check could lead to a wheel parting from the trailer and result in a crash, leading to death or serious injury.

Warning

Lug nuts are prone to loosen after initial installation, which can lead to death or serious injury.

Check lug nuts for tightness on a new trailer or when wheel(s) have been remounted after the first 10, 25 and 50 miles of driving. Use tightening pattern shown on page 19.

Warning

Improper lug nut torque can cause a wheel parting from the trailer, leading to death or serious injury.

Be sure lug nuts are tight before each tow using pattern on page 19.

Do Not Exceed GVWR

The total weight of the load you put in or on the trailer, plus the empty weight of the trailer itself, must not exceed the trailer's Gross Vehicle Weight Rating (GVWR). The maximum load and the GVWR are printed on the VIN tag of the equipment.

No Riders

Keep Flammable Liquids Away from Trailer

Heat generated from the burners of the asphalt hot patcher may ignite a flammable liquid.

Check electrical components

Be sure that the electric brakes and all lighting on your trailer are functioning properly before towing your trailer. Electric brakes and lights on a trailer are controlled via a connection to the tow vehicle, generally a multi-pin electrical connector. Check the trailer taillights by turning on your tow vehicle headlights. Check the trailer brake lights by having someone step on the tow vehicle brake pedal while you look at trailer lights. Do the same thing to check the turn signal lights.

Warning

Improper electrical connection between the tow vehicle and the trailer will result in inoperable lights and electric brakes and can lead to collision.

Before each tow:

- **Check that the taillights, brake lights and turn signals work**
- **Check that the electric brakes work by operating the brake controller inside the tow vehicle.**

Hazards From Modifying Your Trailer

Altering your trailer can damage essential safety items. Even simply driving a nail or screw to hang something can damage an electrical circuit, LP gas line, brake line or other feature of the trailer.

Before making any alteration to your trailer, contact your dealer or Falcon RME at (989) 495-9332 and describe the alteration you are contemplating. Alteration of the trailer structure or modification of mechanical, electrical, plumbing, heating or other systems on your trailer must be performed only by qualified technicians who are familiar with the system as installed on your trailer. Alterations may void the warranty.

Axle Bolts, Frame, Suspension and Structure

Warning

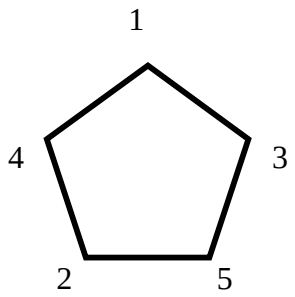
Worn or broken suspension parts can cause loss of control and injury may result.

Have trailer professionally inspected annually and after any impact.

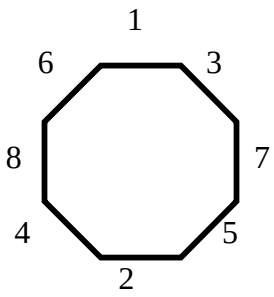
Lug Nuts (Bolts)

Tighten the lug nuts to 100 foot-pounds to prevent wheels from coming loose. Use a torque wrench to tighten the fasteners. Over-tightening will result in breaking the studs or permanently deforming the mounting stud holes in the wheels.

FIGURE 1 LUG NUT SEQUENCE OF TIGHTENING



5-BOLT



8-BOLT

Warning

Lug nuts are prone to loosen after initial installation, which can lead to death or serious injury.

Follow the sequencing diagram in Figure 1 above based on the number of lug nuts on your axle.

Make three passes through each lug nut -- first at 25 foot pounds, second at 50 foot pounds and third at 100 foot pounds.

Wheel Rims

If the trailer has been struck or impacted on or near the wheels, or if the trailer has struck a curb, inspect the rims for damage (i.e. being out of round) and replace any damaged wheel. Inspect the wheels for damage every year, even if no obvious impact has occurred.

FALCON RME ASPHALT HOT PATCHER LIMITED WARRANTY

Falcon Road Maintenance Equipment, Incorporated (Falcon RME) warrants that the Hot Patcher will be free from defects in material and workmanship under normal use for a period of one (1) year from the date of purchase provided that **no unauthorized modifications are made** to the equipment.

Users of any fuel not meeting manufacturers' published fuel specification requirements assume warranty liability for failure of components or emissions certification traceable to the fuel.

Falcon RME will, at its option, repair or replace, any defective part returned to Falcon RME during the one (1) year warranty period. Defective parts must be returned before credit is issued.

Shipping, and transportation costs, in connection with repair or replacement of defective parts, is the sole responsibility of the original purchaser.

This limited warranty does not apply, and no warranty, either expressed or implied, shall be applicable ---

a) to damages resulting from an accident, normal wear and tear (i.e. tires, nozzle, cad cell, fuel filters), **unauthorized alteration**, misuse or abuse,
b) if the product is not operated and maintained according to procedures recommended by Falcon RME.

In no event shall Falcon RME have any monetary liability to the original purchaser in excess of the price paid by the original purchaser for the product in question.

This warranty shall extend only to the original purchaser and is non-transferable.

IMPLIED WARRANTIES INCLUDING THAT OF MERCHANTABILITY AND FITNESS FOR A PARTICULIAR PURPOSE ARE EXPRESSLY LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY. FALCON RME DISCLAIMS ANY LIABILITY FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states/provinces do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of special, incidental or consequential damages so these limitations and exclusions may not apply to the original purchaser. This warranty gives you specific legal rights. You may also have other rights which vary from state/province to state/province.

NO DEALER, DISTRIBUTOR OR OTHER REPRESENTATIVE OF FALCON RME IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR TO GRANT ANY OTHER WARRANTY.

NOTICE: Any and all warning, safety and instructional labels affixed to the machine must not be removed or covered. Falcon RME agrees to replace warning, safety and instructional labels that become damaged, free of charge.

December 13, 2005

FALCON
Road Maintenance Equipment

ASPHALT HOT PATCHER SPECIFICATIONS

Patcher Type	Material Capacity (in pounds)	Base Model Unloaded Weight (in pounds)[1]	Max Gross Weight GVWR (in pounds)[2]	Standard Length[3]	Width	Height[4]
1-ton Trailer	2,000	2,000	6,000	13 ft	83 in	60 in
2-ton Trailer	4,000	2,400	7,000	13 ft	83 in	65 in
3-ton Trailer	6,000	3,400	9,999	13 ft 6 in	83 in	67 in
4-ton Trailer	8,000	3,800	14,000	13ft 6 in	83 in	71 in

Note: Measurements above are accurate ± 5%.

[1] Trailer weight will vary based on options
[2] Gross Vehicle Weight Rating (GVWR) may vary based on axle, tires and rim selection
[3] Trailer length may increase based on the following:
1) Surge brakes add 13 inches
2) Custom length extended trailer hitch
3) Custom length trailer
[4] Trailer Height based on Standard Tires

Inspection, Service and Preparation BEFORE EACH USE	
Item	**Inspection / Service**
Set Hopper Temperature	Open the electrical enclosure and 1) turn automatic temperature controller to the lowest setting, 2) flip the HOPPER toggle switch DOWN/OFF and 3) flip the HIGH/LOW toggle switch DOWN/LOW. Before attempting to turn the propane burner on, open POL valve(s) slowly. Turn the HOPPER toggle switch to the ON/UP position then set the controller to the desired temperature (see pages 31-32) . If the burner does not light, turn the HOPPER toggle switch DOWN/OFF and wait 2 minutes before attempting to turn the HOPPER toggle switch ON/UP for a second attempt to start the burner. If the burner does not light, seek technical assistance from an authorized technician for propane burners. When the burner is running, the HIGH/LOW switch can be adjusted UP/HIGH and DOWN/LOW to change the pressure setting which increases/decreases the BTUs.
Ensure Battery Voltage is 12.8 volts	A l**ow voltage battery can cause component failure. Charge a low voltage battery to 12.8 volts before using the hot patcher.**
Breakaway Brakes • Electric • Hydraulic	Check Breakaway operation and connect to towing vehicle (see page 12). Check Brake Fluid Level in actuator and confirm operation.
Inner Hopper Walls	Coat with an environmentally-friendly non-flammable release agent to facilitate clean-up at the end of the day.
Coupler and Hitch	Check for cracks, pits, and flats and Replace with ball and coupler having trailer GVW rating. Grease. Check locking device & replace when worn. Use hitch adjustment to tow patcher in a level fashion.
Safety Chains and Clevis Hooks	Check for wear and damage and replace if necessary. Cross under trailer hitch and confirm enough slack in chains to turn.
Tires	Check tire pressure when cold. Inflate to psi rating on side of tire.
Wheels - Lug Nuts & Wedges	Check for tightness and tighten if necessary. For new and remounted wheels, check torque after first 10, 25 and 50 miles of driving and after any impact. (see pg. 19 for torque pattern)
Lighting	Connect patcher plug to vehicle electrical receptacle and confirm that all lighting is operable and conforms to local regulations.
Latches and straps	Inspect latches and retention straps for wear and replace if necessary. Secure all latches before moving.
Material Door Linkages AND Finger / Pin	Spray with lubricant such as WD40.
Detachable Equipment	Secure all equipment to trailer -- plate compactor, vibratory roller, tools, hoses, et al. before moving the patcher. **FALCON RME is not responsible for accidents resulting from operator's failure to secure equipment to the patcher.**

Inspection, Service and Preparation BEFORE EACH USE (CONTINUED)	
Item	**Inspection / Service**
Jack Stand (if applicable)	Raise jack stand before moving. **WARNING: Failure to raise the jack when trailer is in tow can cause the trailer to flip and cause serious injuries.**
Battery Charge Wiring	The patcher has battery-charging wires that can be connected to the tow vehicle by connecting the patcher plug to the tow vehicle receptacle. The towing vehicle must have a 10-gauge supply line (RED) and a 10-gauge ground (BLACK) wired to the tow vehicle receptacle.
Solvent Tank or Hudson Sprayer	Using an environmental-friendly asphalt release agent, fill Hudson sprayer reservoir or pour **two inches of the liquid** into the solvent tank**. TIGHTLY CLOSE SOLVENT SPRAYER TOP.**
Check Transfer Oil (if applicable)	Confirm oil jacketed tack tank and/or oil-jacketed hopper transfer oil levels are at the "full" level. Check oil when cold and add transfer oil if necessary using one of the oils listed in the RECOMMENDED FLUID MAINTENANCE SCHEDULE section of the manual. NEVER OVERFILL.
Hydraulic Hookup to Tow Vehicle (if applicable)	It is the end user's responsibility to: 1) supply the asphalt hot patcher with hydraulic fluid from the tow vehicle and 2) adjust the flow rate of hydraulic fluid to the cylinders. **WARNING: To prevent serious injury and to prevent damage to the asphalt hot patcher and tow vehicle, it is essential that a qualified hydraulics technician do this work.**
Outriggers (applicable on dump box trailer)	Raise outriggers before moving a dump box trailer. **WARNING: Failure to raise the outriggers when dump box trailer is in tow can cause the trailer to flip and cause serious injuries.**
Breakaway Battery (if applicable)	Confirm fully charged, connections clean.
Load Slip-in patcher (if applicable)	Follow LOADING SLIP-IN PATCHER INTO TOW VEHICLE procedure in this manual.
Propane Hose	Inspect for cracks or wear and replace if needed.
Propane Hose Fittings	Confirm connection and replace hose if necessary.

Inspection and Service Two Times a Month	
Item	**Inspection / Service**
Dump Box pivot blocks (located at back of patcher -- block, spacer and pin)	Grease generously with clean grease until grease runs clear.

Inspection and Service Monthly	
Item	**Inspection / Service**
Tandem Axle Trailer Suspension Equalizers	Grease with high temperature wheel bearing grease at pivot points.

Inspection and Service Every Three Months	
Item	**Inspection / Service**
Tires	Inspect tread and sidewalls thoroughly. Replace tire when treads are worn, when sidewall has a bulge, or sidewall is worn. Rotate tires on tandem axle trailers front to back.
Hydraulic Cylinders	Lubricate grease zerts and pivot points.
12-Volt Pump Hydraulic Fluid (if applicable)	Check hydraulic fluid level in 12-volt pump and add hydraulic fluid if necessary.
Attaching Hardware	Inspect all fasteners, nuts and bolts and tighten as necessary.
Wheel Bearings	Grease with high temperature wheel bearing grease 6-10 pumps.

Inspection and Service Every Six Months	
Item	**Inspection / Service**
Loading door flange bearings, Material Door Bearings	Grease with high temperature wheel bearing grease 3-5 pumps.
Jack stand gears	Remove cap on jack and pack gears with high-temperature grease.

Inspection and Service Every 12 Months	
Item	**Inspection / Service**
Frame	Inspect all frame welds. Repair as needed.
Axles and Suspension	Inspect Hanger Welds. Repair as needed. Inspect worn or broken suspension parts and replace as needed.
Rims / Wheels	Inspect for cracks & dents. Replace as needed.
Transfer Oil	Change transfer oil in oil jacketed hopper, oil jacketed tack tank and 50/550 thermometers using one of the oils listed in the RECOMMENDED FLUID MAINTENANCE SCHEDULE section of the manual. NEVER OVERFILL and change when oil is COLD.
Wheel Bearings	Remove bearings from axles, clean thoroughly and reinstall with fresh grease.

LUBRICATION SCHEDULE

ITEM	FREQUENCY	LUBRICANT
Material door linkages	Daily	Spray lubricant like WD40
Material door finger / pin	Daily	Spray lubricant like WD40
Dump box pivot blocks (located at back of patcher -- block, spacer and pin)	Two Times per month	Grease generously with clean grease until grease runs clear
Suspension Equalizers	Every month	High temperature wheel bearing grease
Wheel Bearings	Every 3 months plus annually remove bearings from axles, clean thoroughly and reinstall with fresh grease.	Grease with high temperature wheel bearing grease 6-10 pumps
Hydraulic Cylinders	Lubricate grease zerts and pivot points.	Grease generously with high temperature wheel bearing grease
Loading door flange bearings and Material door bearings	Every 6 months	Grease with high temperature wheel bearing grease -- 3-5 pumps
Jack stand gears	Every 6 months	Remove cap on jack and pack gears with high-temp grease.

RECOMMENDED FLUID MAINTENANCE SCHEDULE

Falcon recommends using one of the heat transfer oils listed in the table below. The use of any grade oil not specifically recommended by Falcon RME shall be cause for the voidance of the warranty on the tack tank.

PRODUCER	PRODUCT NAME	PRODUCT NUMBER
Texaco	Regal	R&O 68
Gulf	Harmony	68
Shell	Thermia	"C"
Exxon	Teresstic	68
Phillips	Magnus	68
Chevron USA	Heat Transfer Oil #1	
Conoco	Dectol R&O	68
Union Oil	Turbine Oil	68

All oils subjected to high temperatures deteriorate with time and lose many of their characteristics. For best results and safety, the heat transfer oil in this machine must be drained and replace with any of the oils listed above after five hundred (500) hours of operation or one (1) year, whichever occurs first.

PROCEDURE TO CHANGE HEAT TRANSFER OIL

Remove ½" plug from top of tack tank and pump all heat transfer oil from the tack tank. Discard heat transfer oil in an environmentally safe manner. Fill the oil-jacketed wall with any of the recommended heat transfer oils specified in the above table. Fill to the top of the COLD OIL LINE on the dipstick.

ATTACHING PATCHER TO TOW VEHICLE

1. Back tow vehicle hitch directly under the asphalt hot patcher coupling device.

2. Lower the trailer onto the tow vehicle by turning the jack handle in a counter-clockwise motion until the pintle eye rests on the coupler. Read and follow the receiver manufacturer's instructions to ensure that the patcher is properly secured to the towing vehicle. Secure the jack stand in the raised position before moving the tow vehicle. **WARNING: Failure to raise the jack when trailer is in tow can cause the trailer to flip and cause serious injuries.**

3. Attach the safety chains to the tow vehicle per federal, state and local regulations.

4. Attach the trailer breakaway cable to the tow vehicle per federal, state and local regulations. The lanyard should be long enough to allow for turning corners, yet short enough to disengage the pin from the switch before the safety chains on the hitch become taut in a trailer disconnect situation.

   DANGER: Never connect breakaway cable to safety chains.

5. Plug in the trailer pigtail to the tow vehicle receptacle.

LOADING SLIP-IN PATCHER INTO TOW VEHICLE

WARNING: TO AVOID SERIOUS INJURY, ENSURE THAT ONLY TRAINED PERSONNEL LOAD AND SECURE THE SLIP-IN UNIT TO THE TOWING VEHICLE PER ORGANIZATION PROCEDURES.

WARNING: REMOVE ALL ASPHALT FROM PATCHER BEFORE LOADING OR UNLOADING SLIP-IN UNIT.

WARNING: ENSURE LOADING/UNLOADING EQUIPMENT (I.E. FORK TRUCK) HAS CAPACITY TO HANDLE THE LOAD.

WARNING: DUE TO THE WEIGHT OF THE SHOVELING APRON, USE FORK TRUCK TO LIFT AND LOWER ONTO PATCHER OR SERIOUS INJURY COULD OCCUR.

1. REMOVE SHOVELING APRON FROM SLIP-IN PATCHER
   Using a fork truck, remove apron from the patcher before loading in tow vehicle.

2. LOAD PATCHER INTO VEHICLE WITH FORK TRUCK
   CAUTION: Do not attempt to transport slip-in unit with a fork truck without using fork pockets.
   A. Insert forks into pockets located at rear of patcher.
   B. **Slowly** lift the patcher above the height of the truck bed and move slip-in unit into position over the tow vehicle truck bed.
   C. Slowly lower the patcher onto the bed of the truck.

3. LOAD PATCHER INTO VEHICLE USING LIFTING EYES
   Follow your organization's safety procedures for using your overhead lifting mechanism while loading slip-in hot patcher into towing vehicle.

4. SECURE PATCHER TO TOWING VEHICLE BASED ON YOUR ORGANIZATION'S GUIDELINES AND POLICIES. CONFIRM SLIP-IN UNITS ARE SECURELY FASTENED TO TOWING VEHICLE BY TESTING THE DUMPING CAPABILITY AFTER UNIT HAS BEEN SECURED IN PLACE. **DANGER: STAND BACK WHILE CONFIRMING THAT THE SLIP-IN UNIT IS SECURELY FASTENED TO THE TOWING VEHICLE.**

5. ATTACH SHOVELING APRON USING FORK TRUCK
   Line up smaller steel tubing over larger steel tubing then, using a fork truck, lower into the proper position. Insert the supplied bolts based on the desired shoveling height.

FILLING HOPPER AND LOADING DOOR INSTRUCTIONS

CAUTION: STANDING TOO CLOSE TO THE PATCHER WHILE CLOSING THE LOADING DOORS OR NOT KEEPING THE LOADING DOOR HANDLES FULLY EXTENDED WHILE CLOSING LOADING DOORS COULD CAUSE OPERATOR INJURY.

CAUTION: DUMP BOX MUST BE IN THE "DOWN" POSITION BEFORE OPERATING MANUAL LOADING DOORS.

NOTICE: TO AVOID DAMAGE TO LOADING DOOR BEARINGS, ENSURE THAT ALL ASPHALT IS CLEANED FROM HOPPER WALL CAPS BEFORE CLOSING THE LOADING DOORS (EITHER MANUALLY OR HYDRAULICALLY). FAILURE TO DO SO WILL DAMAGE LOADING DOOR BEARINGS. NEVER ALLOW MANUALLY OPERATED LOADING DOORS TO SLAM SHUT.

WARNING: THE ASPHALT TRAILER HAS BEEN DESIGNED TO SUPPORT A SPECIFIC VOLUME OF ASPHALT. NEVER EXCEED THE CAPACITY OF THE HOPPER.

WARNING: DO NOT RAISE OR LOWER MATERIAL LOADING DOORS UNLESS LOADING DOOR HANDLES ARE FULLY EXTENDED OR INJURY COULD OCCUR.

IF PATCHER HAS MANUAL LOADING DOORS THEN PERFORM STEPS 1-5

IF PATCHER HAS HYDRAULIC LOADING DOORS PERFORM STEPS 6 and 7

1. Remove all four positive locking pins from top of loading doors and hopper walls.
2. Open loading doors by:
   a) grabbing both loading door handles,
   b) pulling handles out until they are fully extended,
   c) while leaving loading door handles fully extended, pull down on the handles to raise the loading doors.
3. Lock loading doors in the open position by inserting locking pins located on the hopper walls**. CAUTION: Failure to use locking pins to hold loading doors open could cause doors to close on the operator causing injury.**
4. Close loading doors by:
   a) removing locking pins from side walls of hopper
   b) extending arms and firmly grabbing loading door handles,
   c) ensuring loading door handles remain fully extended, guide the doors gently upward being careful not to let doors slam closed,
   d) after doors are closed, push the loading door handles forward until fully retracted.
   CAUTION: Standing too close to the patcher while closing the loading doors or not keeping the loading door handles fully extended while closing loading doors could cause operator injury.
5. Replace locking pins on top of loading doors and side hopper walls.

6. OPEN HYDRAULIC LOADING DOORS

NOTICE: MAKE SURE THERE IS CLEARANCE ABOVE AND AROUND THE ENTIRE PERIMETER OF THE PATCHER WHILE HYDRAULIC LOADING DOORS ARE OPEN/OPENING.

CAUTION: ALWAYS TURN TOW VEHICLE OFF AFTER HYDRAULIC LOADING DOORS ARE OPEN.

Make sure that tow vehicle power is on.

Open loading doors by lifting the spool valve. (right spool on a 2-position spool valve - center position on a 3-position spool valve).

Turn off the tow vehicle then fill hopper with asphalt.

7. CLOSE HYDRAULIC LOADING DOORS

Start the tow vehicle.

Close loading doors by depressing the spool valve. (right spool on a 2-position spool valve - center position on a 3-position spool valve).

DANGER: TO AVOID INJURY OR DEATH FROM HOT ASPHALT BURNS, STAND BACK WHEN ASPHALT IS FLOWING FROM A TILTED DUMP BOX.

NOTICE: WHENEVER THE MATERIAL DOOR IS OPEN, WEIGHT MUST BE REMOVED FROM THE MATERIAL DOOR PIN BEFORE A DOOR OPENING ADJUSTMENT CAN BE MADE. TO REMOVE WEIGHT FROM THE MATERIAL DOOR PIN, PULL DOWN SLIGHTLY ON THE GRAB HANDLE WITH RIGHT HAND, THEN, WITH THE LEFT HAND, PULL AND HOLD THE PIN OUT WHILE RAISING (PULLING DOWN ON THE HANDLE) OR LOWERING (GUIDING THE HANDLE UP) TO THE NEXT OPEN/CLOSED POSITION. RELEASE THE LOADING DOOR PIN AFTER THE MATERIAL DOOR HAS STARTED TO MOVE UP OR DOWN.

IF THE LOADING DOOR PIN SNAPS INTO A PRE-SET OPEN POSITION, PERFORM THE SAME PROCEDURE TO RELEASE TENSION ON THE PIN BEFORE COMPLETING THE OPEN/CLOSE MATERIAL DOOR FUNCTION.

TO MOVE LOADING DOOR UP FROM THE FULLY CLOSED POSITION, GRAB THE BLACK HANDLE AND PULL DOWN UNTIL THE MATERIAL DOOR PIN LOCKS IN PLACE (DOOR RAISED ABOUT 5 - 6 INCHES).

OPERATION OF HYDRAULIC MATERIAL DOOR

CAUTION: TO AVOID SERIOUS INJURY, DO NOT PUT HANDS NEAR THE MATERIAL DOOR WHEN LIFTING OR LOWERING.

DANGER: TO AVOID INJURY OR DEATH FROM HOT ASPHALT BURNS, STAND BACK WHEN ASPHALT IS FLOWING FROM A TILTED DUMP BOX.

To open the material door, lift the left lever of the spool valve and release when door is open to desired height.

To close the material door, depress the left lever of the spool valve until door is at desired position.

STARTING THE MAIN HOPPER PROPANE BURNER AND SETTING THE TEMPERATURE CONTROLLER

DANGER: THE PROPANE BURNER SHOULD ONLY BE SERVICED BY AN AUTHORIZED SERVICE PERSON. SERIOUS INJURY OR DEATH COULD RESULT FROM IMPROPER SERVICING OF THE PROPANE BURNER.

DANGER: DO NOT ALLOW THE PATCHER BURNER(S) TO RUN IN AN ENCLOSED AREA THAT IS NOT PROPERLY VENTILATED.

CAUTION: WEAR PROTECTIVE CLOTHING WHILE OPERATING THE ASPHALT HOT PATCHER OR TACK TANK. THE PATCHER WILL HEAT THE ASPHALT MATERIAL AND OIL TO THE TEMPERATURES SET BY THE OPERATOR.

CAUTION: IF YOU SMELL RAW GAS DO NOT ATTEMPT TO IGNITE BURNER.

CAUTION: NEVER PLACE FACE CLOSE TO BURNER

CAUTION: DO NOT USE BURNER WITHOUT SPARK IGNITER AND FLAME ROD IN PLACE

NOTE: DO NOT TURN HOPPER BURNER ON WHEN HOPPER IS EMPTY.

1. Fill hopper with pothole patching material.

2. Turn all non-lighting toggle switches (including HIGH toggle switch) inside electrical enclosure down. The high/low feature changes pressure and increases BTU'S by flipping toggle switch to high/up. To change back to the lower BTU rating, flip the toggle switch down any time a lower BTU rating is desired. When traveling at speeds above 25 mph, set at high/up to keep the burner flame from going out.

3. Open main P.O.L. valves slowly. If opened fast, the safety valve will shut the gas off.

4. Obtain the proper asphalt application temperature by contacting the material supplier. The approximate recommended temperature for cold mix is 100 degrees Fahrenheit while the recommended temperature for hot mix is approximately 240-270 degrees Fahrenheit.

(CONTINUED ON NEXT PAGE)

STARTING THE MAIN HOPPER PROPANE BURNER AND SETTING THE TEMPERATURE CONTROLLER (CONTINUED)

5. Turn HOPPER toggle switch to the ON/UP position and set the hopper temperature. If temperature controller has a black knob, rotate the knob left/(lower) or right(higher) until the desired temperature as identified in step 4 is reached.

   If the temperature controller is digital, by pressing the left green scroll button, the digital display changes from the actual hopper temperature to the desired hopper temperature. To change the desired hopper temperature, the operator holds the left green scroll button down while pressing the up and down arrow keys until the desired temperature appears in the display area. Release left scroll button when the desired temperature appears in the display area. The desired material temperature remains known to the automatic temperature controller, day after day, until it has been altered by an operator. The operator should not expect the burner to ignite when the desired temperature has been set to a temperature lower than the current hopper temperature. A visual indication that the burner should be running is a green light ("call for heat indication") appearing in the upper left hand corner of the automatic temperature controller display.

   When the desired hopper temperature is lower than the current hopper temperature the burner will ignite automatically and run until the box reaches the set temperature – at which time the burner shuts itself off. When the material temperature drops 15 degrees, the hopper propane burner will turn on automatically. If the burner does not light, turn the hopper switch off / down, wait two minutes, then turn the hopper switch on / up again.

   If burner does not ignite, seek assistance from authorized service technician.

READ THESE INSTRUCTIONS BEFORE USING THE ASPHALT HOT PATCHER DUMP BOX

WARNING: STAND BACK 10 FEET FROM PATCHER ANYTIME THE DUMP BOX HOPPER IS IN MOTION.

CAUTION:
PROTECT THE REMOTE HOPPER CONTROL FROM BEING DAMAGED AT ALL TIMES. IF CONTROLLER IS EVER DAMAGED, REPAIR OR REPLACE BY AN AUTHORIZED SERVICE TECHNICIAN.

WARNING: ALWAYS USE THE CYLINDER GUARD (STORED ON HINGED SIDE OF TOOLBOX) WHEN THE HOPPER IS IN THE RAISED POSITION AND REMOVE/REPLACE BEFORE LOWERING.

STORED POSITION

"IN-USE" POSITION

WARNING: BEFORE THE DUMP BOX HOPPER IS RAISED, LOWER BOTH OUTRIGGERS AND INSERT RETENTION PIN INTO POSITION SUCH THAT THE BASE OF THE OUTRIGGER IS ON THE GROUND OR AS CLOSE TO THE GROUND AS POSSIBLE. SHOULD THE PATCHER ACCIDENTALLY UNCOUPLE FROM THE TOW VEHICLE, THE OUTRIGGERS WILL PREVENT THE PATCHER FROM TIPPING BACKWARDS.

OUTRIGGERS

WARNING:
NEVER LEAVE OUTRIGGERS DOWN WHEN THE TRAILER IS IN MOTION. SERIOUS INJURY COULD OCCUR IF OUTRIGGERS ARE NOT RAISED TO PROVIDE ADEQUATE CLEARANCE OVER ROADWAYS AND POTENTIAL OBSTRUCTIONS.

WARNING: NEVER LEAVE HOPPER OR LOADING DOORS RAISED WHEN MOVING PATCHER.

NOTICE: BEFORE OPERATING DUMP BOX HYDRAULICS, CHECK THE DIPSTICK ON THE HYDRAULIC PUMP FOR PROPER HYDRAULIC FUEL LEVEL.

NOTICE: LOW BATTERY VOLTAGE CAN CAUSE PERMANENT DAMAGE TO PUMP AND PATCHER HEATING COMPONENTS. ENSURE THAT BATTERY IS FULLY CHARGED TO 12.8 VOLTS BEFORE AND DURING OPERATION.

LOWERING DUMP BOX INSTRUCTIONS

1) Place cylinder guard in storage location and engage retention pin.

2) Ensure that no one is within 10 feet of the entire trailer and that the remote cord will not be pinched when the hopper is lowered. Using the hopper remote control, depress and hold the "down" button until the hopper is returned to cradle.

3) Replace the remote operating control in the hydraulic pump enclosure.

DANGER: RAISE THE OUTRIGGERS BEFORE MOVING THE DUMPBOX TRAILER TO ENSURE ADEQUATE CLEARANCE ALONG ROADWAYS AND POTENTIAL OBSTRUCTIONS WHILE TRAILER IS IN MOTION.

PATCHER SHUTDOWN

1. Open the electrical enclosure box and turn all toggle switches to the **OFF** position and close POL valves.

2. Remove unused asphalt and clean hopper floor with an environmental-friendly asphalt release agent to prevent a build-up of asphalt that could result in heat loss to the hopper contents. Asphalt build-up on the hopper floor will decrease the useful life of the patcher and cause the burner to run excessively. The built-up asphalt will act as an insulator and keep the material inside the hopper from heating properly. Material may be kept warm overnight, but hopper floor should be cleared as often as possible at the end of the day to extend the life of the patcher.

   INSTRUCTIONS FOR KEEPING HOT MIX OVERNIGHT

   1) Move patcher to a well ventilated area.
   2) Ensure propane tank(s) are full and POL valves have been opened SLOWLY.
   3) Connect patcher battery to a battery charger that is plugged into building power having a 120VAC ground fault circuit interrupt. Plug extension cord into building power **LAST**. Use a heavy-duty UL approved extension cord.
   4) Leave HOPPER toggle switch ON/UP and the HIGH/LOW setting to LOW/DOWN and set automatic temperature controller setting to 180 degrees Fahrenheit. Patcher burner will cycle on and off throughout the night keeping material at 180 degrees. If patcher has a RECYCLE toggle switch it should be left in the DOWN/OFF position when keeping hot mix asphalt overnight.
   5) Raise the hopper temperature controller to an application temperature in the range of 240 to 270 degrees Fahrenheit the next morning and turn the HIGH/LOW toggle switch to HIGH/UP.

   To keep cold mix asphalt overnight, turn off burner and turn on the next day.

   Although material may be kept in the hopper overnight, as a general rule, the hopper floor should be cleaned at the end of each workday.

3. Clean work area and shovels with an environmental-friendly asphalt release agent.

   DANGER: Never us a flammable material to clean hopper because material could ignite and cause serious injury or death.

4. Inspect tires, brakes, breakaway, lighting, attached options, etc. and report any problems or concerns to a supervisor.

5. Inspect hydraulic hoses connecting the spool valve with the towing vehicle and report any problems or concerns to a supervisor.

6. Inspect propane hoses for proper connections and hose cracks and report any problems or concerns to a supervisor.

REPLACEMENT PARTS AND NUMBERS

Item Description	Falcon Part Number
Electrical Enclosure	EL10203
Battery (SRM 24)	EL10026
Battery Box (SRM 24)	EL10217
Battery Terminal End	EL10028
Electric Breakaway	EL11521
Male Receptacle	EL11513
Junction Box (Breakers)	EL11517
20 Amp Breakers	EL11518
30 Amp Breakers	EL11519
50/550 Rear Thermometer	HT10052
12-Volt Toggle Switch	EL10038
Chimney Guard	MI10328
Material Loading Door	DO10330
Material Metering Door	DO10219
Flange Bearing	DO10115
V-Groove Bearing	DO10116
Loading Door Handle Grips	DO10144
Replacement Ratchet Kit	MI10847
Replacement Finger Kit	MI10859
8-Bolt Axle Hub Caps	SU11512
Demountable Rim Hub Cap	SU11772
3/8" Midlink	TR10117
3/8" Grab Hook	TR10101
Lanyard and Pin	DO10145
Vapor Propane Hopper Burner	PR11301
Propane Tack Tank Burner	PR11302
Fenwal	PR11303
Propane Temperature Controller	PR11304
Marine Battery Charger	OP13401
Tack Tank Molasses Valve 1.5"	OP11640
Male Receptacle	OP11513
50/550 Tack Tank Thermometer	OP11642

BATTERY CHARGING INSTRUCTIONS

If the asphalt hot patcher is equipped with an on-board battery charger and male receptacle, connect a heavy-duty UL-approved extension cord to the patcher's male receptacle before plugging the male end of the extension cord into a 120VAC building ground fault circuit interrupt outlet. All the patcher batteries are hard-wired to the on-board battery charger and will be charged at the same time.

If the asphalt hot patcher does not have a male receptacle that is hard-wired to an on-board battery charger, connect a battery charger to the battery terminals before plugging the male end of the battery charger's power cord into a 120 VAC building ground fault circuit interrupt outlet. Perform this procedure on each of the hot patcher batteries making sure to unplug the extension cord from the building power BEFORE connecting to a battery on the equipment.

WIRING COLOR CODE

WARNING: REWIRING THE PATCHER IMPROPERLY MAY CAUSE COMPONENT FAILURE.

NOTICE: REWIRING THE PATCHER WITHOUT PRIOR AUTHORIZATION VOIDS THE WARRANTY.

STROBE / WARNING LIGHT	Orange
RUNNING	Brown
FUEL SENDING UNIT (option)	Violet
ELECTRIC BRAKES	Blue
LEFT TURN	Yellow
RIGHT TURN	Green
BURNER COMMAND WIRE	Silver
POSITIVE	Red
GROUND	Black

Tire Safety Information

This portion of the User's Manual contains tire safety information as required by 49 CFR 575.6.

Section 2.1 contains "Steps for Determining Correct Load Limit - Trailer".

Section 2.2 contains "Steps for Determining Correct Load Limit – Tow Vehicle".

Section 2.3 contains a Glossary of Tire Terminology, including "cold inflation pressure", "maximum inflation pressure", "recommended inflation pressure", and other non-technical terms.

Section 2.4 contains information from the NHTSA brochure entitled "Tire Safety – Everything Rides On It". This brochure This brochure, as well as the preceding subsections, describes the following items;

- Tire labeling, including a description and explanation of each marking on the tires, and information about the DOT Tire Identification Number (TIN).
- Recommended tire inflation pressure, including a description and explanation of:
  - A. Cold inflation pressure.
  - B. Vehicle Placard and location on the vehicle.
  - C. Adverse safety consequences of under inflation (including tire failure).
  - D. Measuring and adjusting air pressure for proper inflation.
- Tire Care, including maintenance and safety practices.
- Vehicle load limits, including a description and explanation of the following items:
  - A. Locating and understanding the load limit information, total load capacity, and cargo capacity.
  - B. Calculating total and cargo capacities with varying seating configurations including quantitative examples showing / illustrating how the vehicles cargo and luggage capacity decreases as combined number and size of occupants' increases. This item is also discussed in Section 3.
  - C. Determining compatibility of tire and vehicle load capabilities.
  - D. Adverse safety consequences of overloading on handling and stopping on tires.

1.1. Steps for Determining Correct Load Limit – Trailer

Determining the load limits of a trailer includes more than understanding the load limits of the tires alone. On all trailers there is a Federal certification/VIN label that is located on the forward half of the left (road) side of the unit. This certification/VIN label will indicate the trailer's Gross Vehicle Weight Rating (GVWR). This is the most weight the fully loaded trailer can weigh. It will also provide the Gross Axle Weight Rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

If your trailer has a GVWR of 10,000 pounds or less, there is a vehicle placard located in the same location as the certification label described above. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity. Cargo can be added to the trailer, up to the maximum weight specified on the placard. The combined weight of the cargo is provided as a single number. In any case, remember: the total weight of a fully loaded trailer can not exceed the stated GVWR.

For trailers with living quarters installed, the weight of water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the trailer before it is loaded with cargo, and is not considered part of the disposable cargo load. Water however, is a disposable cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your dealer to discuss the weighing methods needed to capture the various weights related to the trailer. This would include the weight empty or unloaded, weights per axle, wheel, hitch or king-pin, and total weight.

Excessive loads and/or underinflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure. It is the air pressure that enables a tire to support the load, so proper inflation is critical. The proper air pressure may be found on the certification/VIN label and/or on the Tire Placard. This value should never exceed the maximum cold inflation pressure stamped on the tir

1.1.1. Trailers 10,000 Pounds GVWR or Less

Tire and Loading Information Placard – Figure 1-1

1. Locate the statement, "The weight of cargo should never exceed XXX kg or XXX lbs.," on your vehicle placard. See figure 1-1.
2. This figure equals the available amount of cargo and luggage load capacity.
3. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may safely exceed the available cargo and luggage load capacity.

The trailer's placard refers to the Tire Information Placard attached adjacent to or near the trailer's VIN (Certification) label at the left front of the trailer.

1.1.2. Trailers Over 10,000 Pounds GVWR (Note: These trailers are not required to have a tire information placard on the vehicle)

1. Determine the empty weight of your trailer by weighing the trailer using a public scale or other means. This step does not have to be repeated.
2. Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer's VIN (Certification) label.
3. Subtract the empty weight of your trailer from the GVWR stated on the VIN label. That weight is the maximum available cargo capacity of the trailer and may not be safely exceeded.

1.2. Steps for Determining Correct Load Limit – Tow Vehicle

1. Locate the statement, "The combined weight of occupants and cargo should never exceed XXX lbs.," on your vehicle's placard.
2. Determine the combined weight of the driver and passengers who will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.
4. The resulting figure equals the available amount of cargo and luggage capacity. For example, if the "XXX" amount equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs. (1400-750 (5 x 150) = 650 lbs.).
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in Step # 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult the tow vehicle's manual to determine how this weight transfer reduces the available cargo and luggage capacity of your vehicle.

1.3. Glossary Of Tire Terminology

Accessory weight

The combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Bead
The part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.

Bead separation
This is the breakdown of the bond between components in the bead.

Bias ply tire
A pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tread.

Carcass
The tire structure, except tread and sidewall rubber which, when inflated, bears the load.

Chunking
The breaking away of pieces of the tread or sidewall.

Cold inflation pressure
The pressure in the tire before you drive.

Cord
The strands forming the plies in the tire.

Cord separation
The parting of cords from adjacent rubber compounds.

Cracking
Any parting within the tread, sidewall, or inner liner of the tire extending to cord material.

CT
A pneumatic tire with an inverted flange tire and rim system in which the rim is designed with rim flanges pointed radially inward and the tire is designed to fit on the underside of the rim in a manner that encloses the rim flanges inside the air cavity of the tire.

Curb weight
The weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

Extra load tire
A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Groove
The space between two adjacent tread ribs.

Gross Axle Weight Rating
The maximum weight that any axle can support, as published on the Certification / VIN label on the front left side of the trailer. Actual weight determined by weighing each axle on a public scale, with the trailer attached to the towing vehicle.

Gross Vehicle Weight Rating
The maximum weight of the fully loaded trailer, as published on the Certification / VIN label. Actual weight determined by weighing trailer on a public scale, without being attached to the towing vehicle.

Hitch Weight
The downward force exerted on the hitch ball by the trailer coupler.

Innerliner
The layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

Innerliner separation
The parting of the innerliner from cord material in the carcass.

Intended outboard sidewall
The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

Light truck (LT) tire
A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Load rating
The maximum load that a tire is rated to carry for a given inflation pressure.

Maximum load rating
The load rating for a tire at the maximum permissible inflation pressure for that tire.

Maximum permissible inflation pressure
The maximum cold inflation pressure to which a tire may be inflated.

Maximum loaded vehicle weight
The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

Measuring rim
The rim on which a tire is fitted for physical dimension requirements.

Pin Weight
The downward force applied to the 5th wheel or gooseneck ball, by the trailer kingpin or gooseneck coupler.

Non-pneumatic rim
A mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separably, to the wheel center member and upon which the tire is attached.

Non-pneumatic spare tire assembly
A non-pneumatic tire assembly intended for temporary use in place of one of the pneumatic tires and rims that are fitted to a passenger car in compliance with the requirements of this standard.

Non-pneumatic tire
A mechanical device which transmits, either directly or through a wheel or wheel center member, the vertical load and tractive forces from the roadway to the vehicle, generates the tractive forces that provide the directional control of the vehicle and does not rely on the containment of any gas or fluid for providing those functions.

Non-pneumatic tire assembly
A non-pneumatic tire, alone or in combination with a wheel or wheel center member, which can be mounted on a vehicle.

Normal occupant weight
This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

Occupant distribution
The distribution of occupants in a vehicle as specified in the third column of Table I of 49 CFR 571.110.

Open splice
Any parting at any junction of tread, sidewall, or innerliner that extends to cord material.

Outer diameter
The overall diameter of an inflated new tire.

Overall width
The linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

Ply
A layer of rubber-coated parallel cords.

Ply separation
A parting of rubber compound between adjacent plies.

Pneumatic tire
A mechanical device made of rubber, chemicals, fabric and steel or other materials, that, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

Production options weight
The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

Radial ply tire
A pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.

Recommended inflation pressure
This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification / VIN tag.

Reinforced tire
A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Rim
A metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

Rim diameter
This means the nominal diameter of the bead seat.
Rim size designation
This means the rim diameter and width.

Rim type designation
This means the industry of manufacturer's designation for a rim by style or code.

Rim width
This means the nominal distance between rim flanges.

Section width
The linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

Sidewall
That portion of a tire between the tread and bead.

Sidewall separation
The parting of the rubber compound from the cord material in the sidewall.

Special Trailer (ST) tire The "ST" is an indication the tire is for trailer use only.

Test rim
The rim on which a tire is fitted for testing, and may be any rim listed as appropriate for use with that tire.

Tread
That portion of a tire that comes into contact with the road.

Tread rib
A tread section running circumferentially around a tire.

Tread separation
Pulling away of the tread from the tire carcass.

Treadwear indicators (TWI)
The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

Vehicle capacity weight
The rated cargo and luggage load plus 68 kilograms (150 lbs.) times the vehicle's designated seating capacity.

Vehicle maximum load on the tire
The load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

Vehicle normal load on the tire
The load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CRF 49 571.110) and dividing by 2.

Weather side
The surface area of the rim not covered by the inflated tire.

Wheel center member
In the case of a non-pneumatic tire assembly incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic rim and provides the connection between the non-pneumatic rim and the vehicle; or, in the case of a non-pneumatic tire assembly not incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic tire and provides the connection between tire and the vehicle.

Wheel-holding fixture
The fixture used to hold the wheel and tire assembly securely during testing.

1.4. Tire Safety - Everything Rides On It

The National Traffic Safety Administration (NHTSA) has published a brochure (DOT HS 809 361) that discusses all aspects of Tire Safety, as required by CFR 575.6. This brochure is reproduced in part below. It can be obtained and downloaded from NHTSA, free of charge, from the following web site:

<www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires_index.html>

Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling
- Help protect you and others from avoidable breakdowns and accidents
- Improve fuel economy
- Increase the life of your tires.

This booklet presents a comprehensive overview of tire safety, including information on the following topics:
- Basic tire maintenance
- Uniform Tire Quality Grading System
- Fundamental characteristics of tires
- Tire safety tips.

Use this information to make tire safety a regular part of your vehicle maintenance routine. Recognize that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

1.5. Safety First–Basic Tire Maintenance

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your vehicle.

Underinflated tires and overloaded vehicles are a major cause of tire failure. Therefore, as mentioned above, to avoid flat tires and other types of tire failure, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

1.5.1. Finding Your Vehicle's Recommended Tire Pressure and Load Limits

Tire information placards and vehicle certification labels contain information on tires and load limits. These labels indicate the vehicle manufacturer's information including:

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW–the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear gross axle weight ratings (GAWR– the maximum weight the axle systems are designed to carry).

Both placards and certification labels are permanently attached to the trailer near the left front.

1.5.2. Understanding Tire Pressure and Load Limits

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure– measured in pounds per square inch (psi)–a tire requires to be properly inflated. (You will also find this number on the vehicle information placard expressed in kilopascals (kpa), which is the metric measure used internationally.)

Manufacturers of passenger vehicles and light trucks determine this number based on the vehicle's design load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the "recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.)
Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the "maximum permissible inflation pressure" on the tire sidewall. This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

1.5.3. Checking Tire Pressure

It is important to check your vehicle's tire pressure at least once a month for the following reasons:

- Most tires may naturally lose air over time.
- Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking.
- With radial tires, it is usually not possible to determine underinflation by visual inspection.

For convenience, purchase a tire pressure gauge to keep in your vehicle. Gauges can be purchased at tire dealerships, auto supply stores, and other retail outlets.
The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not relate to the outside temperature. Rather, a cold tire is one that has not been driven on for at least three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires.

1.5.4. Steps for Maintaining Proper Tire Pressure

- Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
- Step 2: Record the tire pressure of all tires.
- Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
- Step 4: If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These "missing" pounds of pressure are what you will need to add.

- Step 5: At a service station, add the missing pounds of air pressure to each tire that is underinflated.
- Step 6: Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label. While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly underinflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

1.5.5. Tire Size

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the tire information placard, the owner's manual, or the sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

1.5.6. Tire Tread

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built-in treadwear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln's head upside down and facing you. If you can see the top of Lincoln's head, you are ready for new tires.

1.5.7. Tire Balance and Wheel Alignment

To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle's frame. This adjustment maximizes the life of your tires. These adjustments require special equipment and should be performed by a qualified technician.

1.5.8. Tire Repair

The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

1.5.9. Tire Fundamentals

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.
1.5.9.1. Information on Passenger Vehicle Tires

Please refer to the diagram below.

P The "P" indicates the tire is for passenger vehicles.

Next number This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Next number This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R The "R" stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next number This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Next number This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer. Note: You may not find this information on all tires because it is not required by law.

M+S The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings; hence, they have some mud and snow capability.

Speed Rating The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below. Note: You may not find this information on all tires because it is not required by law.

* For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

U.S. DOT Tire Identification Number This begins with the letters "DOT" and indicates that the tire meets all federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3197 means the 31st week of 1997. The other numbers are marketing codes used at the manufacturer's discretion. This information is used to contact consumers if a tire defect requires a recall.

Tire Ply Composition and Materials Used The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Maximum Load Rating This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

Maximum Permissible Inflation Pressure This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

1.5.9.2. UTQGS Information

Treadwear Number This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA","A", "B", and "C".

Temperature Letter This letter indicates a tire's resistance to heat. The temperature grade is for a tire that is inflated properly and not overloaded. Excessive speed, underinflation or excessive loading, either separately or in combination, can cause heat build-up and possible tire failure. From highest to lowest, a tire's resistance to heat is graded as "A", "B", or "C".

1.5.9.3. Additional Information on Light Truck Tires

Please refer to the following diagram.

Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT The "LT" indicates the tire is for light trucks or trailers.

ST An "ST" is an indication the tire is for trailer use only.

Max. Load Dual kg (lbs) at kPa (psi) Cold This information indicates the maximum load and tire pressure when the tire is used as a dual, that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg (lbs) at kPa (psi) Cold This information indicates the maximum load and tire pressure when the tire is used as a single.

Load Range This information identifies the tire's load-carrying capabilities and its inflation limits.

1.6. Tire Safety Tips

Preventing Tire Damage

- Slow down if you have to go over a pothole or other object in the road.
- Do not run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.

Tire Safety Checklist

- Check tire pressure regularly (at least once a month), including the spare.
- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass and foreign objects wedged in the tread.
- Make sure your tire valves have valve caps.
- Check tire pressure before going on a long trip.
- Do not overload your vehicle. Check the Tire Information and Loading Placard or User's Manual for the maximum recommended load for the vehicle.

BEFORE YOU BEGIN USING YOUR ASPHALT HOT PATCHER READ AND REREAD THE FOLLOWING COMMONLY ASKED QUESTIONS. YOU WILL PREVENT INJURIES AND INCREASE THE USEFUL LIFE OF YOUR MACHINE WHILE SAVING YOURSELF TIME AND MONEY.

WHY SHOULD I NEVER CLEAN THE HOPPER WITH A FLAMMABLE MATERIAL?

The propane burner(s) heat the hopper to a point where flammable materials (depending on their flash point) could ignite and cause burn injuries to the operator. **To prevent burn injuries, always use a non-flammable, environmentally-friendly product to clean the asphalt hot patcher.**

WHAT DO I NEED TO DO BEFORE PUTTING ASPHALT IN THE HOPPER FOR THE FIRST TIME?

1) FALCON RME RECOMMENDS WEARING PROTECTIVE CLOTHING WHILE OPERATING THE ASPHALT HOT PATCHER OR TACK TANK.

2) Coat the inside hopper walls with a **non-flammable, environmentally-friendly** asphalt release agent before filling the hopper to facilitate cleaning at the end of the day.

SHOULD I BE CONCERNED ABOUT ASPHALT MATERIAL OVERSPILL ON THE TOP CAPS OF THE HOPPER WALLS?

Yes, Asphalt must be cleared away from top of hopper walls before closing loading doors.

CAN I RUN THE TACK BURNER WITHOUT MATERIAL INSIDE THE TACK TANK?

No, The tack tank burner should never be turned on when there is no tack material inside the tank.

WHY IS IT SO IMPORTANT TO KEEP THE HOPPER FLOOR CLEAN? HOW CAN I EXTEND THE USEFUL LIFE OF MY PATCHER?

Failure to clean the bottom of the hopper shortens the life of your asphalt hot patcher and prevents the patcher from working as designed. Built up asphalt acts as an insulator and prevents the heat in the burner box from evenly heating the material inside the hopper. Not only does built up asphalt prevent the material from heating as designed, it forces too much heat to build up in the burner box and causes the burner to run more than necessary. Once the material has reached the "set temperature" of the controller, the burner cycles on and off periodically as the temperature of the material inside the hopper drops 15 degrees Fahrenheit. If the heat is not allowed to radiate through the hopper floor and warm the material inside the hopper, the controller won't get the message to turn off and the burner will run excessively.

The general rule of thumb is to not run the burner any hotter than necessary. Most customers have success applying hot mix at a temperature of approximately 240 to 270 degrees Fahrenheit. The useful life of the machine will be extended and less fuel will be used if the temperature controller is set at a lower temperature.

The controller temperature should be set on the lower end of the recommended range -- see the supplier of the asphalt material for the appropriate application temperature range. If the asphalt material gets too hot, the operator may notice blue smoke emanating from the asphalt. This means that oils are being burned from the material and the propane burner is running too hot. If this is observed, lower the temperature on the hopper controller (located inside the electrical enclosure) and monitor the material to ensure that the material is not too hot. The temperature change will not be observable immediately -- monitor every 15 minutes and make additional adjustments if necessary.

ARE THERE ANY INDICATORS THAT THE HOPPER TEMPERATURE IS TOO HOT?

1) If you can see the asphalt cement (from hot mix) dripping onto the shoveling apron from beneath the material metering door, it is an indicator that the material temperature is too hot. The operator should lower the temperature on the controller.

2) If blue smoke is emanating from the asphalt inside the hopper, oils essential to creating a permanent pothole repair are being burned out of the material. The operator should lower the temperature on the controller.

WHY SHOULDN'T I PUT ASPHALT INTO A HOT EMPTY HOPPER?

Be careful how hot the hopper is when adding asphalt material. When the burner(s) lights, it begins to heat the steel inside the hopper. It is similar to heating a pan on a stove without any contents. If there is nothing to heat inside the hopper, the steel heats to the temperature set on the controller. Once material is put into the hopper, it will burn and sizzle just like food that is put into a hot pan on the stove. Instead, the hopper burner can be turned on shortly before the asphalt is added to the hopper so that is warm -- NOT HOT -- when asphalt is added. Again, use the lower end of the manufacturer's recommended temperature range when setting the temperature on the controller.

HOW IMPORTANT IS IT TO KEEP THE BATTERY FULLY CHARGED?

A low battery, anything below 12.8 volts, may lead to component failure. Falcon RME recommends hooking up the towing vehicle battery to the patcher battery to keep it charged throughout the day. The battery may also be hooked up to a battery charger overnight. If the patcher has a battery charger connected to a male receptacle, use a heavy-duty UL approved extension cord and plug the cord into the patcher BEFORE plugging into a 120VAC ground fault interrupt circuit (building power).

WHAT IS THE PROCESS TO KEEP MATERIAL WARM OVERNIGHT?

See the PATCHER SHUTDOWN section of the manual that describes how to keep hot mix asphalt overnight.

HOW DO I KNOW THE CORRECT TEMPERATURE SETTING ON THE CONTROLLER?

Typical temperatures ranges are:

COLD MIX 100 degrees Fahrenheit
HOT MIX 240 - 270 degrees Fahrenheit

Follow the recommendations of your particular brand/supplier of asphalt.

HOW SHOULD I ADJUST THE HITCH ON THE PATCHER?

When hooking up the patcher to the towing vehicle, adjust the patcher hitch so that the patcher is towed level.

WHY MIGHT THE TEMPERATURE ON THE REAR 50/550 GAUGE BE DIFFERENT THAN THE TEMPERATURE ON THE HOPPER CONTROLLER?

The thermometer on the rear of the hopper measures the temperature of the material inside the hopper. The temperature on the controller measures the temperature of the air in the hopper wall. They should be close -- not necessarily identical.

HOW DO I OPERATE THE MANUAL MATERIAL METERING DOOR?

To raise loading door from a closed position, pull down on grab handle until loading door pin snaps into place (first open position is raised about 6 inches). Whenever the manual material door is open, weight must be removed from the material door pin before a door opening adjustment can be made. To remove weight from the material door pin, pull down slightly on the grab handle with right hand, then, with the left hand, pull and hold the pin out while raising (pulling down on the handle) or lowering (guiding the handle up) to the next open/closed position. Release the loading door pin after the material door has started to move up or down.

IF YOU HAVE QUESTIONS OR CONCERNS ABOUT YOUR ASPHALT HOT PATCHER, YOU MAY CALL FALCON RME DIRECTLY FOR ASSISTANCE AT (989) 495-9332.
WHAT ARE SOME IMPORTANT ONGOING MAINTENANCE ITEMS?

Lugnuts must be kept at 100 foot pounds of torque and tires inflated to pressure on sidewall of tire.

Keep hopper floor clean.

Perform periodic routine maintenance items identified in the operator's manual.

Always use detention pins when loading doors are open to prevent them from closing inadvertently.

Grease flange door bearings and suspension equalizers per lubrication schedule.

At every oil change, check the battery supply wires of the tow vehicle to ensure the patcher battery is receiving AT LEAST 12.8 volts.

SUMMARY

ALWAYS KEEP BATTERIES CHARGED TO 12.8 VOLTS.

CLEAN HOPPER FLOOR AT THE END OF THE DAY (UNLESS HEATING HOTMIX OVERNIGHT)

TURN OFF TOP BURNER AFTER RECYCLED ASPHALT IS THOROUGHLY HEATED OR ICE IS NOT VISIBLE ON COLD MIX.

PERFORM FLUSH THE TACK TANK SPRAY SYSTEM AFTER EACH USE.

DO HOOK UP THE PATCHER TO THE TOWING VEHICLE SO THAT IT RIDES LEVEL.

DO PERFORM ONGOING MAINTENANCE.

DO TAKE WEIGHT OFF PIN/FINGER OF MATERIAL METRING DOOR BEFORE ADJUSTING FROM AN OPEN POSITION.

DO NOT CLOSE LOADING DOORS IF ASPHALT MATERIAL IS ON CAPS OF HOPPER WALLS.

DO NOT RUN THE BURNERS TOO HOT.

DO NOT RUN ANY BURUNER WHEN THERE IS NO MATERIAL TO HEAT.

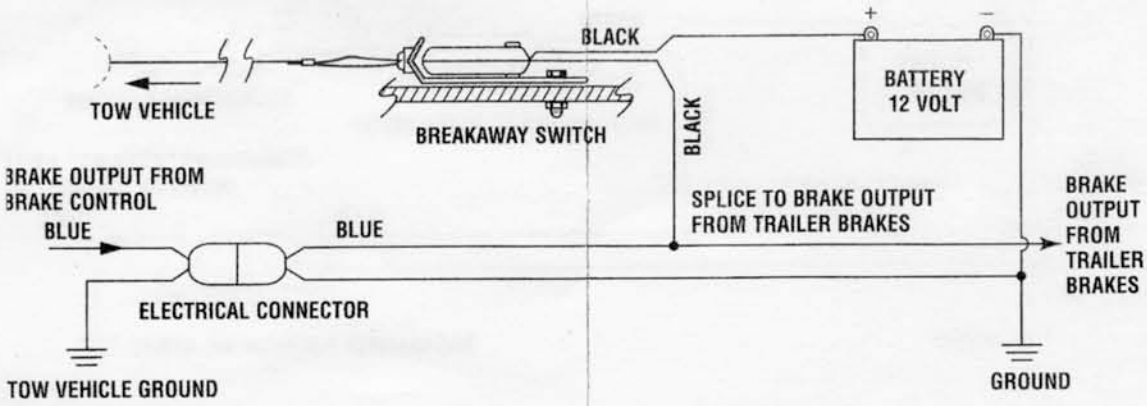
DO NOT OVERHEAT ASPHALT.

DO NOT USE TOP BURNER UNLESS
1) Recycling Asphalt or
2) MELTING ice from cold mix

DO NOT USE TOP BURNER (on a 4-ton Recycling Patcher) WHEN MATERIAL IS BELOW THE CRISSCROSS DUCTWORK.

DO NOT HANG ON THE MATERIAL DOOR CROSSBAR.

BREAKAWAY SWITCH INSTALLATION INSTRUCTIONS



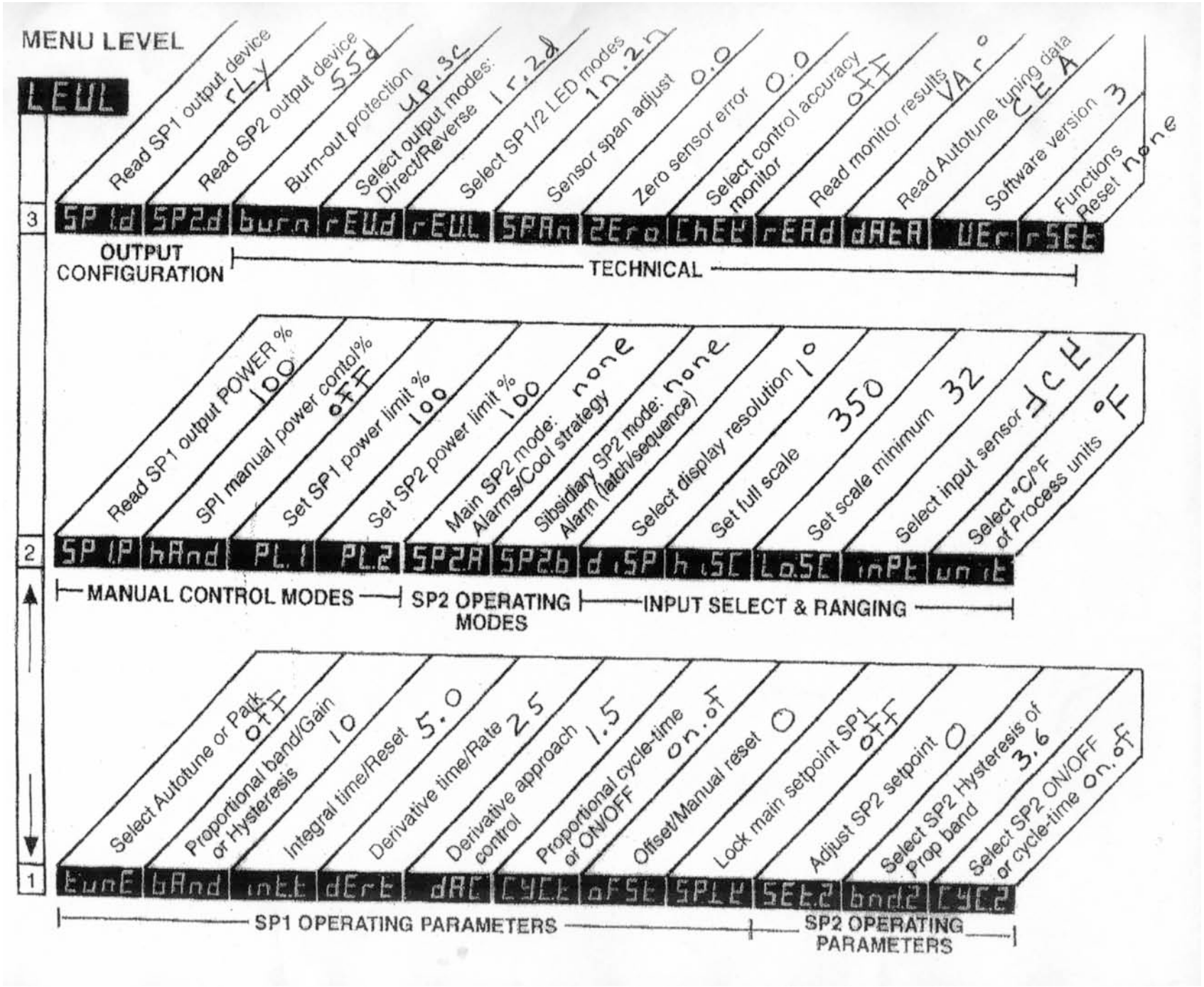
READ THIS FIRST:
Read and follow all instructions carefully before installing or operating the Breakaway Switch. Keep these instructions for future reference.

Important Facts to Remember

1. ATTENTION INSTALLER: Please give this sheet to consumer upon completion of installation.
2. SAFETY ITEM: Solder all wire connections.
3. Check condition of battery prior to each trip.
4. ⚠ WARNING Disconnect trailer plug before testing breakaway unit. Failure to do so will result in severe damage to electronic brake control.
5. ⚠ WARNING Check your breakaway system periodically to insure that wiring and connections are secure. A short or an open circuit can result in a no-brake condition.
6. For optimal performance, it is recommended that breakaway devices be replaced every 3-5 years.
7. For Technical Assistance and Warranty Information call: 1-888-785-5832 or www.tekonsha.com

Installation Guide

1. Mount Battery Case securely to frame, jack post or other suitable location on trailer with Breakaway Switch Cable towards tow vehicle.
2. ⚠ WARNING Switch location should be selected to ensure unobstructed line of pull in event of vehicle separation.
3. Bolt breakaway switch bracket to frame of trailer or battery case bracket using 1/4" bolt and lock nut or (2) 1/4" jam nuts. (Bolt and nuts not included in kit.)
4. ⚠ WARNING Do not over tighten bolt. Switch must be able to pivot.
5. Check and install battery.
6. Wire per schematic. Properly insulate all connections.
7. Attaching to tow vehicle: Attach Breakaway Switch Cable to tow vehicle frame being certain the cable does not drag on the ground and no strain or restriction is placed on the cable.
8. ⚠ WARNING Do not hook cable to safety chain loop or hitch ball.


MENU LEVEL
LEUL
Read SP1 output device
rLY
Read SP2 output device
SSd
Burn-out protection
uP.SC
Select output modes: Direct/Reverse
1r.2d
Select SP1/2 LED modes
1n.2n
Sensor span adjust
0.0
Zero sensor error
0.0
Select control accuracy
oFF
Read monitor results
VAr°
Read Autotune tuning data
CEA
Software version
3
Functions Reset
none
3
SP 1d
SP2d
burn
rEUd
rEUL
SPAn
2Ero
ChEC
rEAd
dAtA
UEr
rSEt
OUTPUT CONFIGURATION
TECHNICAL
Read SP1 output POWER %
100
SP1 manual power control%
oFF
Set SP1 power limit %
100
Set SP2 power limit %
100
Main SP2 mode: Alarms/Cool strategy
none
Sibsidiary SP2 mode: Alarm (latch/sequence)
none
Select display resolution
1°
Set full scale
350
Set scale minimum
32
Select input sensor
JCE
Select °C/°F of Process units
°F
2
SP 1P
hAnd
PL.1
PL.2
SP2A
SP2b
d.SP
h.SC
Lo.SC
inPt
un.it
MANUAL CONTROL MODES
SP2 OPERATING MODES
INPUT SELECT & RANGING
Select Autotune or Park
oFF
Proportional band/Gain or Hysteresis
10
Integral time/Reset
5.0
Derivative time/Rate
25
Derivative approach control
1.5
Proportional cycle-time or ON/OFF
on.oF
Offset/Manual reset
0
Lock main setpoint SP1
oFF
Adjust SP2 setpoint
0
Select SP2 Hysteresis of Prop band
3.6
Select SP2 ON/OFF or cycle-time
on.oF
1
EunE
bAnd
intE
dErt
dAC
CYCt
oFSt
SPLt
SEt2
bnd2
CYC2
SP1 OPERATING PARAMETERS
SP2 OPERATING PARAMETERS